

## CHEMICAL COMPOSITION

### 1    FIELD OF THE INVENTION

2            This invention relates to a chemical  
3    composition and more particularly to a  
4    microcrystalline wax composition for binding a  
5    petroleum solvent so as to result in a creamy smooth  
6    product with a variety of applications.

### 7 8    BACKGROUND OF THE INVENTION

9            Hydrocarbons are chemical compounds of hydrogen  
10   and carbon, also referred to as organic compounds.  
11   Carbon atoms form the skeleton of the hydrocarbon  
12   molecule and may be arranged in chains (aliphatic)  
13   or rings (cyclic). There are three principal types  
14   of hydrocarbons that occur naturally in petroleum:  
15   paraffins, naphthenes and aromatics. Paraffins are  
16   aliphatic, while the other two are cyclic.

17           The most common petroleum solvents are mineral  
18   spirits, xylene, toluene, hexane, heptane, and  
19   naphthas. Aromatic-type solvents have the highest  
20   solvency for organic chemical materials, followed by  
21   naphthenes and paraffins. In most chemical  
22   compositions comprising solvents, the solvent  
23   disappears, usually by evaporation, after it has  
24   served its purpose. Some solvents, particularly  
25   aromatics, pose serious physical and health hazards.

26           Petroleum solvents have multiple industrial and  
27   home applications and are used in paints, adhesives,  
28   as paint thinners, paint strippers, aerosol sprays,  
29   dry-cleaning fluid, charcoal lighter, degreasers,  
30   nail polish removers, and are present in textiles,  
31   plastics, waxes and many other products. Liquid

1 petroleum solvents are highly volatile, which makes  
2 them a fire hazard, as well as a health hazard due  
3 to their rapid evaporation rates, inhalation or  
4 exposure risks, and disposal problems.

5 Petroleum wax is a relatively high molecular-  
6 weight hydrocarbon (approximately C16 to C50), solid  
7 at room temperature and derived from higher boiling  
8 petroleum fractions. There are three general types  
9 of petroleum-derived wax: paraffin, microcrystalline  
10 and petrolatum. Microcrystalline waxes differ in  
11 that the crystal structure is more branched and the  
12 carbon chains are longer. Microcrystalline waxes  
13 are typically more flexible and have higher tensile  
14 strengths and melting points. They are also more  
15 adhesive and bind with solvents. When used in  
16 chemical compounds, microcrystalline waxes are  
17 typically ground up into micronized particles and  
18 combined with water or solvents as emulsions or  
19 dispersions.

20 In order to reduce the risk of use in handling  
21 of petroleum solvents, the present invention  
22 includes a method of mixing petroleum solvents into  
23 a stable composition that is less volatile and less  
24 of a hazard, yet still has multiple applications.

25 Prior art U.S. Patents petroleum solvents and  
26 paraffins include Tanner, U.S. Patent No. 4,043,765,  
27 dated August 23, 1977 for Artificial Fireplace Logs  
28 with Ignition Strips. Tanner describes that a  
29 suitable thickener may be mixed with a fuel to form  
30 a paste and lists a variety of useful thickeners.  
31 The thickener may be added to the fuel with the use  
32 of heat as an aid in formation of the paste. U.S.  
33 Patent No. 5,226,405 to Snow dated July 13, 1993 is

1 for an Ignition Platform and Fuel Component for  
2 Kindling a Fire. Snow uses a fuel composition for  
3 impregnating an ignition platform to be used to  
4 rapidly ignite coal or charcoal fires or wood in a  
5 fireplace. In his composition, Snow includes  
6 polyethylene terephthalate (PET) hydrocarbons in a  
7 specified range along with a low melt paraffin and  
8 microcrystalline wax and may include refined  
9 petroleum. Snow describes this composition as  
10 burning clean, substantially without smoke, and to  
11 be essentially non-volatile, safe to store and  
12 transport, and easy to pack and handle.

13 U.S. Patent No. 3,920,415 dated November 18,  
14 1975 to Reusser et al. is for Odor Inhibition for  
15 Paraffin Hydrocarbons. This patent describes that  
16 "odorless mineral spirits" are generally marketed  
17 for use as paint thinner, insecticide carrier oil,  
18 charcoal lighter fluid, industrial cleaning  
19 compounds and general solvents. This invention  
20 relies on the addition of 2,4,6-tris-(dimethyl  
21 aminomethyl) phenol to inhibit the oxidation of  
22 odorless mineral spirits with consequent prevention  
23 of odor formation. The Jones U.S. Patent No.  
24 6,093,224 of July 25, 2000 is for a Long Burning  
25 Fire Starter. The Jones composition comprises  
26 odorless mineral spirits and propylene glycol, which  
27 are used to saturate a holder made of a mix of  
28 diatomaceous earth and wood pellets. Once  
29 impregnated with the fuel composition, the holder is  
30 overcoated with paraffin wax.

31 The following illustrates the principles,  
32 practice, and applications of methods constituting  
33 this invention. While this invention is satisfied  
34 by embodiments in many different forms, there will

1    herein be described in detail certain embodiments of  
2    the invention with the understanding that the  
3    present disclosure is to be considered as exemplary  
4    of the principles of the invention and is not  
5    intended to limit the invention to the embodiments  
6    illustrated and described.

7

8    DESCRIPTION OF THE PREFERRED EMBODIMENTS

9            Microcrystalline wax has unique molecular  
10    structure which allows it to bind petroleum  
11    solvents. At room temperature, however,  
12    microcrystalline wax does not readily combine with  
13    petroleum solvents, requiring that the wax be  
14    pulverized into small pieces in order to create a  
15    solvent-borne wax dispersion. The particle size of  
16    the wax in the dispersion is typically greater than  
17    one micron.

18           It has been discovered that melting the  
19    microcrystalline wax and pouring it into the solvent  
20    while mixing, allows the wax to readily bind to the  
21    solvent. Trial and error has shown there must be a  
22    sufficient liquid microcrystalline wax-to-solvent  
23    ratio in order to bind all of the solvent, resulting  
24    in a stable composition that does not separate. For  
25    example, this minium ratio for microcrystalline wax  
26    and synthetic mineral spirits is approximately one  
27    part wax to four parts of mineral spirits. The  
28    resultant combination is a creamy composition that  
29    is less volatile and less hazardous than the solvent  
30    alone. Additional melted microcrystalline wax  
31    increases the thickness of the composition as the  
32    mixture increases in wax content. It has also been  
33    found that when using a minimal amount of wax to  
34    solvent, the resulting composition has waxy lumps.

1 These lumps may be eliminated by adding white oil,  
2 isoparaffin or normal paraffin to the mixture, which  
3 results in a smoother consistency.

4 **Typical applications of the inventive composition:**

5 The resultant compound has applications by  
6 itself, such as a carbonaceous fire lighter or hand  
7 cleaner and paint remover. The composition may also  
8 be the base stock for other products when combined  
9 with various additives. A thicker verison of the  
10 composition comprising pumice, a surfactant, and  
11 hand emollients results in an effective hand  
12 cream/paint remover for oil based paint. Further,  
13 the composition can be combined with crushed coal or  
14 coal dust for use as a fuel.

15 The solvent that is bound in the composition  
16 becomes less volatile and less hazardous and the  
17 composition may be used as a base stock for  
18 additives to create multiple consumer products.

19  
20 **Example 1**

21 The following example is provided to illustrate  
22 one method of preparation of the inventive  
23 composition, however, those skilled in the art will  
24 recognize that other petroleum solvents may be used  
25 as well, instead of that presented in the example.

26 Starting with 200 to 800 parts of a synthetic  
27 isoparaffinic hydrocarbon, sometimes otherwise  
28 referred to as odorless mineral spirit, at room  
29 temperature, add 10 to 500 parts of liquid (normal  
30 paraffin or isoparaffin) at room temperature and mix  
31 vigorously. Heat microcrystalline wax at  
32 approximately 180 to 200 degrees Fahrenheit, until  
33 it is completely melted. Pour 90 to 700 parts of  
34 the melted microcrystalline wax into the solvent and

1 liquid paraffin mixture, then mix vigorously until  
2 you have a consistent milky composition. Pour the  
3 resulting composition into a suitable container and  
4 seal. As it cools, the composition becomes less  
5 viscous and forms a creamy liquid. Adding a higher  
6 percentage of microcrystalline wax results in a  
7 smooth paste that is less viscous. A preferred  
8 combination with wide applications as a base  
9 composition is 700 parts of natural or synthetic  
10 petroleum solvent, to 100 parts of normal paraffin,  
11 to 200 parts of melted microcrystalline wax. White  
12 oil may be used in place of normal paraffin or  
13 isoparaffin to smooth the composition. The  
14 percentage combination of ingredients may be varied  
15 within the approximate ranges stated, and any  
16 natural or synthetic petroleum solvent may be  
17 substituted for the example solvent.

18 **Example 2 - Hand cream paint remover**

19 Starting with 40 - 750 parts of synthetic  
20 isoparaffinic hydrocarbon (odorless mineral spirits)  
21 at room temperature, add 10 to 200 parts of normal  
22 paraffin, add 1 to 10 parts of aloe oil, add 1 to 10  
23 parts of eucalyptus oil, add 1 to 20 parts of  
24 nonionic surfactant and 1 to 20 parts of ionic  
25 surfactant and then mix vigorously. Heat  
26 microcrystalline wax at approximately 180 to 200  
27 degrees Fahrenheit, until it is completely melted.  
28 Pour 200- 400 parts of the melted microcrystalline  
29 wax into the mixture then stir vigorously until it  
30 is evenly mixed. Add 10 to 100 grams of pumice  
31 powder per liter and then mix vigorously again. As  
32 it cools, the resultant chemical mix becomes less  
33 viscous and forms into a gel or hand cream suitable  
34 as a hand paint remover for oil based paints,

1 stains, varnish, lacquer or urethane. A preferred  
2 composition for use as a hand cream paint remover is  
3 670 parts of odorless mineral spirits, to 100 parts  
4 of normal paraffin or isoparaffin, to 5 parts of  
5 aloe oil, to 5 parts of eucalyptus oil, to 5 parts  
6 of ionic surfactant to 5 parts of nonionic  
7 surfactant, to 300 parts of melted microcrystalline  
8 wax. Add 20 grams of pumice powder per liter.

9 There are multiple benefits to the invention  
10 which include: reducing the volatility of petroleum  
11 solvents, making the solvents less hazardous to  
12 handle and the formation of a stable composition as  
13 a base stock for the addition of additives that  
14 result in unique industrial and home products.

15 The base composition of 70 parts of synthetic  
16 odorless mineral spirits, 10 parts of normal  
17 paraffin, and 20 parts of melted microcrystalline  
18 wax, was tested by an independent testing laboratory  
19 to estimate emission rates per start when used as a  
20 charcoal lighter. The test was performed in  
21 accordance with California's South Coast Air Quality  
22 Management District Rule 1174 Ignition Method  
23 Compliance Certification Protocol, with the  
24 exception that the hydrocarbon results were based  
25 upon the continuous hydrocarbon measurements instead  
26 of SCAQMD Method 25.1. The Resultant Emission Rate  
27 (LB VOC/Start) was 0.0044. The South Coast Air  
28 Quality Management District Rule 1174 Limitation is  
29 .020. These results indicate that the base  
30 composition tested was well within the Rule  
31 limitations for Volatile Organic Compounds per  
32 start. As a comparison, the best known charcoal  
33 lighter has a resultant emission rate of .018 lb  
34 VOC's per start.

1           Since the base composition with synthetic  
2   odorless mineral spirits gives off such a small  
3   amount of volatile organic compounds when burned, it  
4   can be added to coal particles or coal dust to  
5   fluidize the coal. This facilities pumping of the  
6   coal, enhances the coal as a fuel source and reduces  
7   the volatile organic compounds in emissions.

8           The base composition with synthetic odorless  
9   mineral spirits has significant benefits as a wood  
10  stove, wood pellet heater, or fireplace fire  
11  starter. The mixture lights easily when applied to  
12  carbonaceous materials but does not flare up, due to  
13  its low volatility. The mixture is odorless when  
14  odorless mineral spirits are used as the solvent.  
15  The mixture spreads across the carbonaceous fuel  
16  source after lighting. It also burns approximately  
17  50% longer than other plain solvent fire starters,  
18  such as charcoal lighter or kerosene.

19          As a hand paint remover for oil based paint,  
20  the composition offers unique benefits over existing  
21  hand paint removers. Typical hand paint removers  
22  are made with alcohol, which has limited ability to  
23  remove oil based paint. When plain solvents are  
24  used on the skin, they tend to dry out or de-fat the  
25  skin, which can result in dermatitis. The base  
26  composition can be combined with skin emollients,  
27  such as aloe, others, such as eucalyptus oil (which  
28  has an antiseptic quality and pleasing odor),  
29  surfactants and pumice powder to result in a cream  
30  hand paint remover that is very effective yet is  
31  less damaging to the skin than a plain solvent. The  
32  mixture is less volatile than a plain solvent, which  
33  makes it less of a fire hazard. It has a pleasant  
34  odor, and since a small amount is effective, it



1 doesn't present the disposal problems of a plain  
2 solvent.

3 It should be clear at this time that a creamy  
4 smooth chemical composition has been provided that  
5 is useful in multiple applications. However, the  
6 present invention is not to be considered as limited  
7 to the examples which are to be considered  
8 illustrative rather than restrictive.

9  
10 SUMMARY OF THE INVENTION

11 A process for making a chemical composition  
12 includes the steps of mixing 200-800 parts by volume  
13 of petroleum solvent with 10-500 parts by volume of  
14 normal paraffin or isoparaffin at room temperature  
15 to form a solvent paraffin mixture. A  
16 microcrystalline wax is heated to between 180-200  
17 degrees Fahrenheit until melted and 90-700 parts by  
18 volume of a melted microcrystalline wax are  
19 vigorously mixed with the liquid paraffin and  
20 solvent mixture to form a creamy liquid useful as a  
21 hand cream and paint remover as well as a fire  
22 starter. The hand cream paint remover may have from  
23 400-800 parts by volume of liquid petroleum solvent  
24 mixed with 10-200 parts by volume of normal paraffin  
25 or isoparaffin and 150-200 parts by volume of  
26 microcrystalline wax and further mixed with about 1-  
27 20 parts by volume of an ionic surfactant and may  
28 include 1-10 parts by volume of aloe oil and 1-10  
29 parts by volume of eucalyptus oil.